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REMARKS

The October 11, 2006 Office Action was based upon pending Claims 1-29, 40, and 48-59. In this paper, Claims 1, 22, 24, 49-52, and 59 are amended and Claim 28 is canceled without prejudice. Additionally, new Claims 60-62 are added. Thus, after entry of this Amendment, Claims 1-27, 29, 40, and 48-62 are pending and presented for further consideration.

Request for Continued Examination

Applicants thank the Examiner for entering the amendment mailed July 27, 2006. The Office Action states, however, that when filing the continuation examination under 37 CFR §1.114, the invention sought for patent cannot be changed. The Office Action states that claims submitted with the Request for Continued Examination have been changed from reciting optical elements that “cooperate to produce an image” (wherein the image has to be pre-stored in the optical elements) to claiming optical elements that create images from an object placed in front of the optical elements (like a mirror). The Office Action states that it seems that the claims originally filed were incorrect in presenting the invention.

The analysis set forth in the Office Action, however, is based on the assumption that the phrase “cooperate to produce an image” is limited to producing an “image that is pre-stored in the optical elements.” This assumption is not valid and can explain the cause of confusion. Moreover, to assume that the phrase “cooperate to produce an image” excludes “creating an image from an object placed in front of the optical elements” is also not correct. Applicant submits that confusion has resulted because the phrase “cooperate to produce an image” was presumed to be mean solely producing an “image that is pre-stored in the optical elements” and to exclude “creating an image from an object placed in front of the optical elements” when there is no basis for such an assumption.

Rejections under 35 U.S.C. §132(a) and 35 U.S.C. §112

The amendment mailed July 27, 2006 is objected to under 35 U.S.C. §132(a) because it introduces new matter into the disclosure. The Office Action cites as the added material that is not supported by the original disclosure the amendment to Claim 1 to include the phrase “a plurality of optical elements comprised of microscopic ring patterns.” The Office Action states

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that the specification fails to disclose that the optical elements comprising holographic optical elements have “microscopic ring patterns.”

Claims 4 and 56 are also rejected under 35 U.S.C. §112 as failing to comply with the written description requirement. The Office Action cites again that the specification fails to disclose that the optical elements comprising holographic optical elements have “microscopic ring patterns.”

Clear written support is provided for a plurality of optical elements comprised of microscopic ring patterns. For example, paragraph [0033] recites optical elements comprising microscopic patterns. Paragraph [0033] further states that these optical elements comprises surface relief features such as grooves or rulings or other phase change features such index of refraction variations. Moreover, both Fresnel lenses and diffractive optical elements are recited. The features may be circular or elliptical. See copy of paragraph [0033] below.

[0033] The optical elements preferably comprise microscopic patterns such as miniature curved or inclined or declined refractive (or reflective) surfaces as in the case of Fresnel lenses. The optical elements may also comprise surface relief features such as grooves or rulings or other phase change features such as index of refraction variations in the case of diffractive optical elements. These features may be circular, elliptical, cylindrical, linear, or have other regular or irregular shape and configurations. These features, whether grooves, miniature refractive features in a Fresnel lens, or diffractive features in a diffractive optical element such as a hologram, are preferably small having an average spacing that may range from between about 0.5 micrometers (μm) to about 2 millimeters (mm). These features also preferably have an average height or depth ranging from between about 0.2 micrometers to about 200 microns. Dimensions (spacing and size) outside these ranges are also possible... (Emphasis added.)

Accordingly, clear written support is provided for the amendments to Claim 1.

Clear written support for amending Claim 1 by adding the word “ring” to thereby recite a “plurality of optical elements comprising microscopic ring patterns” is also provided in paragraph [0036]. Paragraph [0036] describes example optical elements comprising Fresnel lenses shown in Figure 5. The Fresnel lenses comprise a plurality of concentric or cylindrical rings. See copy of paragraph [0036] below.

[0036] A cross-section of an exemplary optical layer or film 100, in an embodiment wherein the optical elements are Fresnel lenses, is illustrated in FIGURE 5. As is well known, Fresnel lenses are refractive lenses having a substantially flattened spatial extent. Fresnel lens generally comprise a plurality

of concentric or cylindrical rings. These rings comprise refractive surfaces having local curvature and/or inclination/declination similar to that of a conventional plano-convex or plano-concave refractive lens so as to refract light in a manner similar to a conventional non-Fresnel.... (Emphasis added.)

Paragraph [0038] further describes first and second Fresnel lens optical elements each comprising a plurality of rings. See paragraph [0038] below.

[0038] FIGURE 5 illustrates a cross-sectional view of a first Fresnel lens optical element 112 formed in a first region 110 of the optical film or layer 100, and an adjacent second Fresnel lens optical element 122 formed in a second region 120 of the optical film or layer 100. In this exemplary embodiment, the first and second optical elements 112, 122 are formed over a substrate 102. The first Fresnel lens optical elements 112 comprises a plurality of rings 116 having curved or inclined/declined refractive surfaces 118 that refract light so as to form images. The second Fresnel lens optical elements 122 also comprises a plurality of rings 126 having curved or inclined/declined refractive surfaces 128 that refract light so as to form images. FIGURE 5 shows first and second Fresnel lens refractive optical elements 112, 122 having approximately equal power of opposite sign. In such cases, the cross-sectional profiles may be the complement or the inverse of each other, the convex shapes curvatures of the rings in the first lens element 112 being opposite to or the negative of the concave shaped curvatures of the rings in the second lens element 122. (Emphasis added.)

Figure 6 also shows optical elements comprising rings. See Figure 6 below.

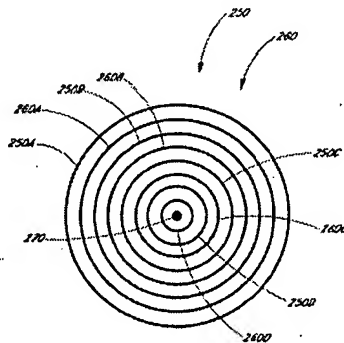


FIG. 6

Paragraph [0040] describes the rings shown in Figure 6. Paragraph [0040] also states that the rings can be included in optical elements comprising Fresnel lenses or diffractive optical elements.

[0040] In various embodiments such as illustrated in FIGURE 6, two or more optical elements having different optical power and focal lengths may be

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superimposed over each other. These two or more lens elements may comprise Fresnel lenses or diffractive optical elements for example. Other types of optical elements capable of being formed in or on a sheet may also be employed. As shown in FIGURE 6, a first lens element 250 comprises a first plurality of rings 250A, 250B, 250C, 250D which may correspond, for example, to rings of a Fresnel lens. These rings 250A, 250B, 250C, 250D are concentric about a center 270. These rings 250A, 250B, 250C, 250D may comprise refractive (or reflective) features similar to those depicted in the Fresnel lens 112 of FIGURE 5. Preferably, these rings 250A, 250B, 250C, 250D have refractive surfaces that are selected to provide the Fresnel optical element 250 with a first focal length. (Emphasis added.)

Paragraph [0047] also specifically recites that the optical elements may comprise diffractive optical elements such as holograms. See paragraph [0047] below.

[0047] In an embodiment similar to that shown in FIGURE 6, the optical elements 250, 260 may comprise diffractive optical element such as holograms. The rings may, for example, comprise phase features such as refractive index modulations or surface relief features (e.g. thickness variations) that alter the optical path length and phase of the light. As discussed above, preferably the diffractive optical elements 250, 260 have different focal lengths. One may be positive and the other may be negative. Accordingly, the phase features in the first optical element 250 may be the reciprocal of the phase features of the second optical element 260. The phases may, for example, differ by π . As shown in FIGURE 6, preferably the pair of optical elements 250, 260 are superimposed or at least partially overlapped and produce images that are partially or substantially overlapped. The rings 250A, 250B, 250C, 250D and 260A, 260B, 260C, 260D are concentric about a common center point 270. Preferably, however, the focal lengths of the two optical elements 250, 260 are different and the respective images formed by these optical elements are formed at different distances from the viewer. (Emphasis added.)

Paragraph [0048] also recites that the rings may be circular or noncircular, for example, elliptical. Paragraph [0048] additionally recites diffractive features, holograms, and diffractive optical elements. See paragraph [0048] below.

[0048] Although a plurality of circular rings are shown in FIGURE 6, the optical features may be non-circular. These optical features may, for example, be elliptical or linear or curved or have other regular or irregular shapes and configurations. The patterns need not be symmetric or continuous. Such non-circular diffractive, refractive, or reflective features, may be used for example in holograms or other diffractive optical elements as well as Fresnel lenses. As described above, other optical elements that may be formed in or on the sheet may be employed as well. (Emphasis added.)

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These paragraphs certainly support Claim 1 and Claims 4 and 56, which depend from amended Claim 1.

Paragraphs [0050] through [0052] disclose methods manufacturing both Fresnel lenses and diffractive or holographic optical elements. See, for example, paragraphs [0050] and [0052] below.

[0050] The optical elements formed on the optical films and sheets described herein can be manufactured according to a wide variety of techniques. For example, individual dies for Fresnel lenses or *diffractive or holographic optical elements* can be formed by diamond turning or photomask techniques. Larger patterns may be formed by step and repeat processes. As discussed above, the arrangement of lenses may be disordered or ordered, e.g., periodic. Larger lens patterns may be embossed onto rolls of film to create the optical sheets.

[0052] The methods of fabricating the sheets of optical elements should not be limited to those described above or elsewhere herein. Other different approaches in processing and manufacture are possible. For example, surface relieve or *volume holographic or other diffractive optical elements* may be formed using well-known processes such as contact copying, embossing, casting, and extruding. Multiple replication steps may be employed. One exemplary method of creating a *volume diffractive optical elements* by embossing a surface relief pattern onto a layer of curable material, is described in greater detail in U.S. Patent Application Publication US 2003/0124435 A1, entitled "Diffractive Optical Element and Method of Manufacture", and published on 3 July 2003. The entire disclosure of this patent application publication is hereby incorporated by reference herein. Other techniques can be used to create microscopic patterns that form, for example, Fresnel lens, *holographic optical elements or other diffractive optical elements*.

Accordingly, ample support is provided for both patterns comprising Fresnel lenses as well as diffractive or holographic optical elements. Rings are sufficiently described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors at the time the application was filed had possession of the invention recited in Claim 1. Diffractive optical elements with ring patterns are also sufficiently described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors at the time the application was filed had possession of the invention recited in Claims 4 and 56.

Additionally, ring patterns, Fresnel lenses, and diffractive optical elements such as holograms are sufficiently described in the specification in such a way as to enable one skilled in

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the art to which it pertains or with which is most nearly connected to make and/or use the invention.

Accordingly, Applicants respectfully request that the rejection of Claim 1 under 35 U.S.C. §132(a) as well as the rejection of Claims 4 and 56 under 35 U.S.C. §112 be withdrawn.

In the October 11, 2006 Office Action, Claims 1-28 and 48-59 are also rejected under 35 U.S.C. §112 as failing to comply with the enablement requirement. The Office Action states that the claims contain subject matter that is not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With regard to Claim 1, the Office Action cites the limitation that the “plurality of optical elements is comprised of microscopic ring patterns in the surface that *cooperate* to produce an image” as well as the limitation that “when a viewer or (an object) [is] disposed with respect to the surface *multiple images the object* are formed at different distances from the surface.” The Office Action states that specification fails to teach how the optical element could in one hand cooperate to produce an image (which means the image has to be pre-stored in the optical elements), yet at the other hand behaves as optical elements such as a mirror to produce images of an object. The Office Action also recites similar arguments with regard to Claim 49.

This analysis set forth in the Office Action, however, is based on the assumption that the phrase “cooperate to produce an image” is limited to producing an “image that is pre-stored in the optical elements.” This assumption is not valid and can explain the cause of confusion. Moreover, to assume that the phrase “cooperate to produce an image” excludes the possibility that “when a viewer is disposed respect to the surface multiple images the viewer are formed at different distances from the surface” is also not correct. Applicant submits that confusion has resulted because the phrase “cooperate to produce an image” was presumed to be mean solely producing an “image that is pre-stored in the optical elements” and to exclude the possibility that “when a viewer is disposed respect to the surface multiple images the viewer are formed at different distances from the surface” when there is no basis for such an assumption.

With regard to Claim 53, the Office Action cites the limitation that the “such that portions of the surface appear to be closer to the viewer than other portions of the surfaces.” The Office

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Action states that the specification fails to teach how portions of a surface would appear to be closer or not to the viewer. The Office Action further states that the specification simply fails to disclose what is the structure that allows the light from the surface to “appear be closer” to the observer.

The specification does not fail to teach how some portions of the surface appear to be closer to a viewer than other portions of the surface. The specification teaches and Claim 53 recites that each of the elements have optical power and a focal length and that at least some of the optical elements are substantially different from other focal lengths such that the optical power of the elements are different. The different powers of the optical elements cause some portions of the surface to appear to be closer to the viewer than other portions of the surface. Applicants acknowledge that the claim invention was not obvious to one skilled at the time the invention was made. Accordingly, the Examiner may be skeptical that Applicants have achieved this result. To show the Examiner that optical elements having different optical power indeed cause the some portions of surface to appear to be closer to the viewer than other portions of the surface, Applicants propose to provide a specimen for viewing by the Examiner. In particular, Applicants propose to provide a specimen that includes optical elements having different optical power and that shows that some portions of the surface clearly and unambiguously appear to be closer than other portions of the surface.

With regard to Claims 52 and 59, the Office Action states that the specification and the claims fail to teach the essential requirement and elements for causing the opposite direction movement of the object and the images of the object.

Applicants refer to Figure 4 and paragraph [0030] which explicitly shows that three-dimensional motional effects can result from optical elements having different, e.g., positive and negative, focal lengths. In particular, as illustrated in Figure 4, with optical elements having different, e.g., positive and negative optical power, when an object moves in a particular direction relative to the optical film 100, a first image 114 formed below the surface of the optical film 100 (that is, $d_1 < 0$) because of negative optical power will move in the same direction as the object, whereas a second image 124 formed above the surface of the decorative film 100 (that is, $d_2 > 0$) will move in the opposite direction as the object. Accordingly, Claims 52 and 59 are enabling by the disclosure.

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To expedite prosecution, Applicants have amended Claims 52 and 59 to recite that at least some of the focal lengths are positive and others of the focal lengths are negative such that movement of the object causes movement of the image of the object/viewer in a direction opposite from the movement of the object/viewer.

Applicants respectfully request that the rejection of Claims 1-28 and 48-59 under 35 USC §112 be withdrawn.

Claim Objections

Claims 1-28 and 48-59 are objected to because of informalities discussed below.

(1) The Office Action states that the phrase "a plurality of optical elements comprised of microscopic ring patterns" recited in Claim 1 is confusing and indefinite since it is not clear if each of the optical elements has a microscopic ring pattern or the plurality of optical elements form ring patterns.

To address the Examiner is concerned Claim 1 has been amended to recite that "...a plurality of optical elements each comprised of microscopic ring patterns..."

(2) The Office Action states that the phrase "when a viewer is disposed with respect to the surface" recited in Claim 1 and the phrase "when an object is disposed with respect to the surface" recited in Claim 49 is confusing and indefinite since Claims 1 and 49 each claims an "optical product" and it is not clear if "viewer" and the "object" are part of the "optical product" or not.

To address Examiner's concern Claim 1 has been amended to recite at the end of the claim the phrase "such that multiple images of a viewer disposed with respect to the surface are formed by respective optical elements at different distances" to clearly express that in the viewer is not part of the "optical product."

Similarly, Claim 49 has been amended to recite at the end of the claim the phrase "such that multiple images of an object disposed with respect to the surface are formed by respective optical elements at different distances" to clearly express that the object is not part of the "optical product."

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(3) The Office Action states that the phrase "substantially similar" recited in Claim 22 is confusing and indefinite since it is not clear to what degree is this "substantially similar" referred to.

To address the Examiner's concern, Claim 22 has been amended to recite a plurality of said optical elements having substantially the same optical power.

(4) The Office Action states that the phrase "said pattern" recited in Claim 24 is confusing and indefinite since it is not clear which pattern is this pattern referred to.

To address the Examiner's concern, Claim 24 has been amended to depend from Claim 21 and not Claim 23. Additionally, Claim 24 has been amended to recite "said pattern in which said optical elements are arranged" to provide further clarification.

(5) The Office Action states that Claim 28 is really confusing. The Office Action states that it is not clear what is considered to be a "central ring-shaped optical surface."

To address the Examiner's concern, Claim 28 has been canceled.

(6) The Office Action states that the phrase "symmetric patterns" recited in Claim 50 is confusing. The Office Action questions how the symmetry is measured, i.e., with respect to what.

To address the Examiner's concern, Claim 50 has been amended to recite that said microscopic patterns are symmetric patterns having symmetry about a point.

(7) The Office Action states that Claim 53 is completely confusing and indefinite since it is impossible for the "portions of the surface" that the optical elements are formed within to "appear" closer or not to the viewer.

Applicants disagree that the features recited in Claim 53 are completely confusing. The claim limitation that "some portions of the surface appear to be closer to a viewer than other portions of the surface" is clear and unambiguous.

Applicants acknowledge the claimed invention was not obvious to one skilled at the time the invention was made. Accordingly, the Examiner may be skeptical that Applicants have achieved this result. To show the Examiner that the optical elements having different optical power indeed cause some portions of surface to appear to be closer to the viewer than other portions of the surface, Applicants propose to provide a specimen for viewing by the Examiner. In particular, Applicants propose to provide a specimen that includes optical elements having

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different focal lengths and that shows that some portions of the surface clearly and unambiguously appear to be closer than other portions of the surface.

Applicants respectfully request that the objections to Claims 1-28 and 48-59 be withdrawn.

Rejections Under 35 U.S.C. §103

Claims 1-28 and 48-59 are rejected under 35 U.S.C §103(a) as being unpatentable over Gaudyn (U.S. Patent No. 4,492,442), in view of Kerberlein (U.S. Patent No. 6,800,357).

The analysis set forth the Office Action relies on Gaudyn as the primary reference. Gaudyn discloses a projection arrangement for projecting three-dimensional images of objects into space. This three-dimensional projection arrangement, however, is completely different from the optical product claimed by Applicants. A closer look at Claims 1-28 and 48-59 illustrates how the three-dimensional projection arrangement of Gaudyn differs from the Applicants' claimed invention.

The Office Action states that Gaudyn teaches a projection arrangement that serves as the optical product that is comprised of lens material having a surface with a plurality of facets that have multiple focal points, which implicitly means that the focal power for some of the facets are different from the other and when an object is disposed in front of the lens material, an image or multiple images of the object are formed at different focal positions to provide a three-dimensional view of the object.

Gaudyn, however, fails to disclose each of the limitations recited in Claims 1-28 and 48-59. For example, nowhere does Gaudyn disclose that "multiple images of a viewer disposed with respect to the surface are formed by respective optical elements at different distances" as recited in Claim 1. Although Figure 6 in Gaudyn shows a single object 40 and separate images 50 and 52, **these images are not at different distances**. The same is true for Figure 10; the two images of the cube 108 and 110 are not at different distances. The arrangement shown is symmetrical, and the two images of the cube 108 and 110 are displaced the same distance from the respective lenses 112 and 114. Similarly, Claim 49 recites that multiple images of an object disposed with respect to the surface are formed at different distances and Claim 53 recites that some portions of the surface appear to be closer to a viewer than other portions of the surface. Neither of these limitations are disclosed by a Gaudyn as well.

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Additionally, the separate images (images 50, 52 in Figure 6 and the images 108, 110 in Figure 10 of Gaudyn) are formed by different optical elements (Fresnel lenses 58, 60 in Figure 6 and Fresnel lenses 112, 114 in Figure 10). Nowhere, however, does Gaudyn teach that these different pairs of optical elements have different optical power from each other. Whether Gaudyn discloses a Fresnel lens having multiple focal points is irrelevant. Gaudyn does not disclose a plurality of Fresnel lenses wherein the optical power of the Fresnel lenses are different from each other. A reading of Gaudyn to the contrary is inappropriate.

For example, the Office Action states that one skilled in the art must understand that in order to produce a three-dimensional image from a three-dimensional extended object, different parts of the object has to be focused at different focal positions by the multi-focal facets. Focusing different parts of an object at a different positions to produce a *single* two-dimensional image, however, is not the same as forming *multiple* images of the object (or viewer).

The Office Action also states that because Gaudyn disclosed a plurality of facets that have multiple focal points, by implication the focal power for some of the facets are different from the other and thus when an object is disposed in front of the lens material, an image or multiple images of the object are formed a different focal positions to provide three-dimensional view of the object. These statements, however, are counter to Gaudyn. Gaudyn only shows one image per Fresnel lens. Accordingly, implying that the multiple focal lengths shown by Gaudyn yield multiple images of the viewer or object is counter to the teaching of Gaudyn and is thus improper. Without resolving this inconsistency, such an inference cannot be used as the basis of the rejection. Applicants, therefore, request the Examiner to withdrawal the rejection based on Gaudyn.

With regard to Claims 2-3, 48, and 54-55, the Office Action states that Gaudyn teaches that the facets are of Fresnel lenses having concentric ring patterns. The Office Action further states that a Fresnel lens is a diffractive optical element in nature.

Applicants point out that Fresnel lenses and diffractive optical elements are different. Fresnel lenses are not diffractive optical elements. Fresnel lenses, for example, accomplish image formation using properties of refraction much like a conventional plano-convex, biconvex, bi-concave or plano-concave lens and do not rely on properties of diffraction as would a

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diffractive optical element. Gaudyn supports this fact. See, e.g., Figure 5A and column 4, lines 15-20.

The Office Action also states that Gaudyn does not teach explicitly that the optical elements or facets "cooperate to produce an image." The Office Action further states that it is not clear how could the optical elements for forming images of an object, (like a mirror) are capable forming an image together.

Applicants point out that Claim 1 recites a surface comprising a plurality of optical elements each comprised of microscopic ring patterns in the surface that cooperate to produce an image. Applicants also point out that Claim 1 further recites that each of the elements has optical power and a focal length. Claim 1 continues to recite that at least some of the focal lengths are substantially different from other focal lengths such that the optical power of some of the elements are different, such that multiple images of a viewer disposed with respect to the surface are formed by respective optical elements at different distances.

Applicants acknowledge the claimed invention was not obvious to one skilled at the time the invention was made. Accordingly, the Examiner may be skeptical that Applicants have achieved the claimed features. As described above, however, to assist the Examiner in appreciating this achievement, Applicants propose to provide a specimen for viewing by the Examiner.

The Office Action states that Keberlein teaches arranging a plurality of Fresnel optical elements to form a macroscopic pattern as a geometric recognizable shape, such as a star, for the benefit of providing a decorative three-dimensional pattern using the Fresnel lens elements. The Office Action further states that it would have been obvious to one skilled in the art to apply the teachings of the Keberlein to modify the Fresnel facets of Gaudyn to also make optical Fresnel facets to form certain geometric patterns to provide additional decorative 3-D visual effects.

Applicants respectfully disagree. Gaudyn discloses a three-dimensional projection arrangement for projecting three-dimensional images of objects into space. The image projection may be achieved without the use of a screen. The enlarged three-dimensional image appears floating in space visible to unaided eyes of an audience. (See abstract.) One skilled in the art would not modify the Fresnel facets of Gaudyn to make optical Fresnel facets to form certain geometric patterns because of concern that such modification would interfere with or detract

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from the enlarged three-dimensional image floating in space as visible to the unaided eyes of the audience. Accordingly, such modification is not obvious. See MPEP 2143.01, section V ("If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification"), citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

With regard to Claim 53, the Office Action states that these references do not explicitly teach that different portions of the surface with the plurality of optical elements formed therein appear to be closer to a viewer for some of them as compared to others. The Office Action continues to state that both Gaudyn and Keberlein teach, however, that the Fresnel elements are placed in front of a reflective surface, wherein by having different focal power and focal points for the facets, the reflected light from different portions of the reflective surface will be focused at different points which make some portions of the reflective surfaces closer than others as viewed by a viewer. This conclusion, however, appears to be inconsistent with what is shown by Gaudyn. As described above, Gaudyn only shows one image per Fresnel lens. Additionally, each of these images are at the same distance from the respective Fresnel lenses. Accordingly, assuming that with different focal power and focal points for the facets, some portions of the reflective surfaces would be closer than others is contradictory to what is shown by Gaudyn.

Applicants also point out that Keberlein teaches that the star is cut from a Fresnel lens having a single focal length.

With regard to Claims 4 and 56, the Office Action states that these references do not teach explicitly that the optical elements can also be holographic optical elements. The Office Action continues to state, however, that Fresnel lenses being diffractive in nature suggests that the element can also be formed holographically to make them holographic optical elements, for the benefit of having an accurate wavelength and angular selectivity to make the optical focal power for the elements more accurately created.

First, as described above, Fresnel lenses are not diffractive optical elements. Second, diffractive optical elements introduce color separation which would be disadvantageous in the three-dimensional projection arrangement disclosed by Gaudyn. One skilled in the art would therefore not replace Fresnel lenses with diffractive optical elements in the three-dimensional projection arrangement disclosed by Gaudyn because of concern that such modification would

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interfere with or detract from the enlarged three-dimensional image floating in space as visible to the unaided eyes of the audience. Accordingly, such modification is not obvious. See MPEP 2143.01, section V ("If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification"), citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

With regard to Claim 5, the Office Action states that both Gaudyn and Keberlein teach that the Fresnel lenses have positive focal length but it does not teach explicitly that they may also have negative focal length. The Office Action states, however, that it is known in the art that an optical element having negative focal length will not be able to produce real images and will tend to diverge the incident light and make virtual image formed behind the plane the optical element. The Office Action continues to state, however, that it would have been obvious to one skilled in the art to modify the Fresnel lenses of Gaudyn to make some of the lenses with negative focal point for the benefit of adding different decorative and aesthetic appearance for the product.

Applicants respectfully disagree. As described above, Gaudyn discloses a three-dimensional projection arrangement for projecting three-dimensional images of objects into space without the use of a screen. One skilled in the art would not include focal lengths that are positive and focal lengths that are negative to form virtual images behind the plane the optical element if one is not interested in having a screen. Accordingly, such modification is not obvious. See MPEP 2143.01, section V ("If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification"), citing *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

With regard to Claims 6-8, the Office Action states that although Keberlein does "not teach *explicitly* about a spacing of the grooves to have the claimed values, based on the fundamental diffraction theory it is known in the art that the spacing or a period of the grooves determines the diffraction properties of the diffractive optical elements." The Office Action further states that "it is noted that a Fresnel lens is a diffractive optical element." The Office Action concludes that the Fresnel lenses therefore either implicitly have the claims spacing value

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for the purpose of diffractive visible range of light to make color graphic patterns or it is an obvious matter of design choices to one skilled in the art to make these Fresnel lenses having the spacing having the claimed values so that they are capable of diffracting visible light for making color appear in graphic design.

Applicants point out as stated above that Fresnel lenses are not diffractive optical elements.

Claims 9-14 and 16-20, depend from Claim 1 and, thus, Claims 9-14 and 16-20, include all of the features of Claim 1. As described above, Claim 1 is patentable over a combination of Gaudyn and Keberlein. Accordingly, the combination of claim limitations recited in Claims 9-14 and 16-20 are not taught or suggested by the combination of cited references for at least the reasons described above regard to Claim 1. Applicants, therefore, respectfully request that Claims 9-14 and 16-20 be allowed.

With regard to Claims 21-24, 51, 57, and 58, Office Action states at Gaudyn does not teach that the optical facets form a pattern. The Office Action states, however, that Keberlein teaches that the Fresnel lenses are arranged into a star pattern. The Office Action concludes that it would then have been an obvious modification and design choice to one skilled in the art to make facets of Gaudyn having similar focal length to be arranged to form a pattern such as the multi-lens star for the benefit of adding further visual effect to the arrangement.

As described above, Gaudyn discloses a three-dimensional projection arrangement for projecting three-dimensional images of objects into space. The image projection may be achieved without the use of a screen. The enlarged three-dimensional image appears floating in space visible to unaided eyes of an audience. (See abstract.) Accordingly, it would not have been an obvious modification and design choice to one skilled in the art to make facets of Gaudyn having similar focal length to be arranged to form a pattern such as the multi-lens star for the benefit of adding further visual effect to the arrangement because of concern that such modification would interfere with or detract from the enlarged three-dimensional image floating in space as visible to the unaided eyes of the audience. Accordingly, such modification is not obvious. See MPEP 2143.01, section V ("If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification"), citing *In re Gordon*, 733 F.2d 900, 221 USPQ

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1125 (Fed. Cir. 1984). Likewise, the limitations recited in Claims 21-24, 51, 57, and 58 are not obvious. Applicants, therefore, respectfully request that the rejection of Claims 21-24, 51, 57, and 58 be withdrawn.

Claim 50, depends from Claim 49 and, thus, Claim 50, include all of the features of Claim 49. As described above, Claim 49 is patentable over a combination of Gaudyn and Keberlein. Accordingly, the combination of claim limitations recited in Claims 50 are not taught or suggested by the combination of cited references for at least the reasons described above regard to Claim 49. Applicants, therefore, respectfully request that Claim 50 be allowed.

With regard to Claims 52 and 59, Office Action states that based on the mirror property and the Fresnel lens property of the arrangement shown by Gaudyn, the created image is in reverse direction such that the object and its image are moving in opposite directions.

Applicants note that Claims 52 and 59 have been amended to recite that at least some of the focal lengths are positive and others of a focal lengths are negative. Gaudyn fails to disclose these claim features. Applicants, therefore, respectfully request that Claims 52 and 59 be allowed.

Accordingly, the limitations recited in Claims 1-24 and 48-59 are not obvious. Applicants, therefore, respectfully request that the rejection of Claims 1-24 and 48-59 be withdrawn.

Claims 26-28 are rejected under 35 U.S.C. §103(a) as being unpatentable over the patents issued to Gaudyn and Keberlein as applied to Claim 1, and further in view of the patent issued to Servatius et al (U.S. Patent 6,700,712).

Claims 26-28, depend from Claim 1 and, thus, Claims 26-28, include all of the features of Claim 1. As described above, Claim 1 is patentable over a combination of Gaudyn and Keberlein. Accordingly, the combination of claim limitations recited in Claims 26-28 are not taught or suggested by the combination of cited references for at least the reasons described above regard to Claim 1. Applicants, therefore, respectfully request that Claims 26-28 be allowed.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants request that the Examiner withdraw the outstanding rejections and allow the present application.

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By focusing on specific claims and claim limitations in the discussion above, Applicants do not imply that other claim limitations are disclosed or suggested by the references.

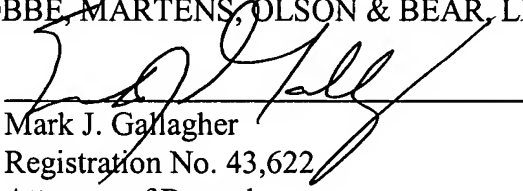
If any issues remain which can potentially be resolved by telephone, the Examiner is invited to call the undersigned attorney of record at his direct dial number of 949-721-2950.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 4/10/07

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